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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MUROMOTO JR, ROBERT H

ART UNIT	PAPER NUMBER
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3765

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/077,548

Applicant(s)

SURVE, SWATEE N.

Examiner

Robert H Muromoto, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Examiner's Comment

Upon review of the appeal brief filed 2/4/2005, finality of the previous rejections in the instant application has been withdrawn. The previous rejection's have been modified and are presented below.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-12, 14-22, 24 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Post et al. '771.

Post discloses the fabrication of electronic devices and circuits, and in particular to the integration of such devices and circuits into textiles (fabrics, clothing material). Post discloses a fabric woven with non-conductive fibers in the warp and a conductive fiber in the weft. The conductive fibers 110 may be continuously adjacent along the weft (substrate). The fibers of the fabric are used to create electrical circuits. The leads of a resistor and a **capacitor** 122 (claim 11, 21), as well as the pins of an integrated circuit 124 are soldered to single fibers of the fabric 100 (col.4, lines 15-51). A fabric comprising a woven matrix of conductive fibers running in both directions can

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be used to capacitively or electrically couple electronic components, or in sheet form can serve as an electrostatic antenna (claim 10, 20).

To prevent fibers 110 from making unwanted contact as a result of folding, the fabric 100 may be provided with a non-conductive (insulating, protective, shield, claims 4-8, and 14-18) coating (e.g., a transparent acrylic coating that may be sprayed on) following affixation of the electronic components. Alternatively, an insulating layer 135 may be applied to one or both sides of the fabric 100. Insulating layer can, if desired, be a textile with handling characteristics similar to those of the fabric 100 (col. 4, lines 58-65).

Electrically active textiles can also be created by sewing, embroidery or weaving of conductive material into a substantially non-conductive fabric matrix or substrate. Typically, the threads are formed by spinning together fibers of a polymer (plastic, claim 24) such as KEVLAR® with fibers of a metal.

Another embodiment uses an elastic (e.g., foam, claim 25) panel to provide resistance in a switching mechanism for the circuit.

In yet another embodiment, the strips of conductor material may be coated with a semiconductor to form nonlinear thresholding elements at the overlap regions that prevent false contacts and/or phantom switching. The use of the semiconductor makes the electrical component a transistor, as recited by the applicant in claims 9 and 19.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2, 3, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Post et al., in view of Miller 6,251,488.

Although Post teaches essentially all of the limitations of the instant invention there is no teaching of using a laser spray process to form the electrical components on the fibers or the formation of a substrate on the fibers prior to affixing the electronic components onto the fibers.

However, as stated in applicant's own specification on page 8, paragraph 28, and on page 9, lines 11-15, "It should be noted that the substrate 203, the protective layer 225, and the shielding layer 227 can each be created using the techniques disclosed in the Miller patent referenced above. Because these structures do not require a high degree of resolution, however, these structures can also be formed using less precise techniques, such as simply dipping the fiber 203 in a liquid form of the material to be used for the substrate 203, the protective layer 225, or the shielding layer 227. These structures can also be formed by, e.g., conventional gas deposition, spraying, or any other suitable technique (page 8, paragraph 28, instant specification)."

"Thus those of ordinary skill in the art will understand that, according to the teachings of the invention, any structure that can be fabricated using the Miller

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technique or other suitable technique can be formed on a fiber in such a way that the fiber may be subsequently woven into a fabric for clothing or other articles of wear (page 9, lines 11-15, instant specification)."

This citation admits the obviousness of using the techniques of Miller or any other suitable process for depositing electronic components and a substrate onto fibers as recited in claims 2, 3, and 13.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Post article to use a spray deposition process as taught by Miller or any other suitable process for depositing electronic components rather than soldering, and depositing substrate materials onto fibers to be woven into fabric articles.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Post et al., in view of Miller and further in view of Carroll.

Although Post and Miller teach essentially all of the limitations of the instant invention, there is no teaching of using either synthetic or natural leather as a clothing material.

However, Carroll teaches a wearable personal computer system which uses leather as an inexpensive and flexible material in a garment formed with electrical components integrated within the structure. Leather is a very well known material in all types of apparel, and can be easily produced at relatively low cost.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use leather as the flexible material of an electronically active garment.

Response to Arguments

Applicant's arguments filed 2/4/2005 have been fully considered but they are not persuasive. Applicant argues that Post does not teach "forming an electronic component on either a fiber or over a surface of a piece of clothing material".

It is the examiner's position that Post clearly shows the forming of an electronic component on a fiber or over a surface of cloth material. Especially important disclosures from Post have been italicized above for emphasis, no new recitations have been added to the previous rejection.

This citation taken from the applicant's remarks, "...electronic components are then connected to the conductive fibers by, e.g., soldering..." This statement describes the forming of an electronic component over the surface of a fiber and therefore over a cloth material. The "electronic component" is soldered to the fabric, which is equivalent to "forming on a surface of a piece of clothing material." as recited in the claims.

When using the broadest reasonable interpretation, Post clearly anticipates the limitation, "forming an electronic component on either a fiber or over a surface of a piece of clothing material.

The Examiner cites, Webster's dictionary for a definition of the word "on" recited in the independent claims. "On: used as a function word to indicate presence within the confines of"; Post discloses, "The leads of a resistor 120 and a capacitor 122, as well as the pins of an integrated circuit 124 are soldered to single fibers of the fabric 100 (col. 4, lines 35-40)." The soldering of electronic components clearly meets the definition of

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“forming electronic components on a fiber” and “over a clothing material” as the surface of the fibers is the surface of the clothing material.

Applicant's argument with respect to claims 2, 3 and 13 are moot as these claims are now rejected by Miller.

Applicant's argument with respect to claim 23 is not persuasive, leather and artificial leather have been used as materials for all types of clothing to take advantage of leather's intrinsic properties (low cost, durability, aesthetic). The examiner as evidence has cited a wearable personal computer that teaches leather as a low cost and flexible material as a possible material. A wearable personal computer is clearly in the same problem solving area as the instant invention. Additionally, the use of leather or synthetic leather in all types of apparel is not novel.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert H Muromoto, Jr. whose telephone number is 571-272-4991. The examiner can normally be reached on 8-530, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Calvert can be reached on 703-305-1025. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Bhm

April 28, 2005



JOHN S. CALVERT
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